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SUBJECT: Costa Rica to Construct Plasma-Propelled Space Rocket

REF: N/A

¶1. Summary: Costa Rican national hero Franklin Chang, a former NASA astronaut and dual U.S.-Costa Rican national, recently opened a local branch of his Ad Astra Technologies Company in Liberia, Guanacaste, one of the country's poorest regions. The laboratory is the first of its kind in Central America and will conduct ground-breaking research in the design and building of a plasma-propelled rocket. While initial job creation will be limited, Chang hopes that the economic spin-off effects will be substantial. The symbolic value of the venture is already manifest. End Summary.

Plasma Technology

¶2. The rocket Chang hopes to create would be a so-called Variable Specific Impulse Magnetoplasma Rocket, or VASIMR. The VASIMR would use plasma for fuel and the research challenge is to devise a magnetic field-based technology capable of containing the fuel's energy. Plasma fuel reaches temperatures measured in the millions of degrees and thus must be contained within a magnetic canal to prevent damage to the rest of the vehicle, while harnessing its energy to propel the rocket through space.

¶3. Plasma rockets would be extremely cost effective; Chang told journalists at the opening ceremony that they would be some 300 times more fuel-efficient than current chemical rockets. Additionally, plasma rockets would have a greater carrying capacity. Though the rocket initially will be designed for cargo missions, Chang says he thinks manned missions using the technology will be feasible in the future.

Future Plans

¶4. Chang hopes to have the lab fully operational within six months and plans to present the first VASIMR prototype by the end of 2007. Pending negotiations with NASA, he hopes to make the first version of the rocket motor available for the International Space Station by ¶2008. There the model would be equipped with advanced solar technology. The first fuel-sustainable model of the VF-200-1 should be complete by 2010.

¶5. The scientist's plans for the plasma rocket are ambitious: Chang envisions the technology enabling the establishment of lunar stations, Mars travel, possibly even travel to the moons of Jupiter. Typical of Chang's visionary nature is his expectation that humans will inhabit the moon by 2018, something that would be sustained by the type of advanced solar technology that he believes the Guanacaste lab will help develop.

Benefits for Costa Rica

¶6. The local project will be managed by Ad Astra Rocket Company, a subsidiary of Franklin Chang's Ad Astra Technologies, Inc. in Houston. The research will be shared between the company's two divisions; Liberia currently is served by numerous daily direct

flights from the U.S. Chang is confident that he will be able to attract additional venture-capital funding to complete the project, which has a budget of \$150 million.

¶7. Chang's lab in Liberia will directly employ some 25 people. However, he hopes the project will spur the high technology sector throughout the country. Most of the VASIMR's parts will be designed and manufactured within Costa Rica and the project will also create jobs for circuit-makers, welders, and solar panel designers. Additionally, Chang wants Costa Rican universities to collaborate and train new students to assist with the project.

¶8. Costa Rican President Oscar Arias joined roughly 500 other guests from around the world at the opening ceremony for the company on July 15. He told the audience, which in addition to Costa Rica's political elite included many of the Nobel-prize winning and other scientists with whom Chang had worked in his NASA career, that he welcomed Chang's message of spurring the country's economic development through technology. "He (Chang) should transport, as his first passenger, the fear of change so prevalent in Costa Rica."

¶9. COMMENT: Chang's venture is a first for a country with an economy based largely on tourism and primary exports, but with a growing tech sector. Costa Ricans are justly proud of the achievements of a favorite son and his ambitions for the future. While clearly born in part of a desire to return something of his personal success to the country of his birth, Chang's decision to base a key element of his scientific venture in Costa Rica reflects also some of the country's comparative advantages in scientific education and transportation connections. President Arias's allusion to the project's value as an antidote to Costa Ricans' fear of change was a clear reference to the looming battle over CAFTA ratification, and was directed at least in part at one member of the audience, Otton Solis, Arias's former presidential rival and the leader of the PAC party that embodies the political opposition to CAFTA.

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